PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Takashi IMAMURA, et al.

Docket No: Q66342

Appln. No.: 09/961,208

Group Art Unit: 2624

Confirmation No.: 6241

Examiner: Craig W. Kronenthal

Filed: September 24, 2001

For: METHOD AND APPARATUS FOR DETECTING ABNORMAL PATTERN CANDIDATES

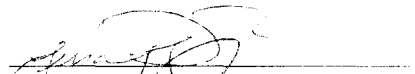
SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. The statutory fee of $500.00 is being charged to Deposit Account No. 19-4880 via EFS Payment Screen. The USPTO is also directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: November 29, 2006

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
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Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

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I. REAL PARTY IN INTEREST

The real party in interest in this appeal is FUJI PHOTO FILM CO., LTD. of Japan. The assignment was previously submitted and was recorded on September 24, 2001 at Reel 012205, Frame 0748. It is noted that the above-named assignee changed its official name on October 2, 2006 and is now known as FUJIFILM CORPORATION.

II. RELATED APPEALS AND INTERFERENCES

To the knowledge and belief of Appellant, the Assignee, and the Appellant's legal representative, there are no other appeals or interferences before the Board of Appeals and Interferences that will directly affect or be affected by the Board's decision in the instant Appeal.

III. STATUS OF CLAIMS

Claims 1-24 are pending in the present application and stand finally rejected. The rejections of claims 1-24 are being appealed.

Claims 1, 7, 8, 14, 17, 18, 23, and 24 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Nishikawa et al. (U.S.P. 5,598,481).

Claims 2, 3, 9, 10, 15, 16, 19 and 20 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nishikawa et al. (U.S.P. 5,598,481) in view of Takeo et al. (U.S.P. 5,714, 764).

Claims 4, 5, 6, 11, 12 and 13 have been rejected under 35 U.S.C. § 103 as being unpatentable over Nishikawa et al. (U.S.P. 5,598,481) in view of Doi et al. (U.S.P. 4,907,156).

Claims 21 and 22 are rejected under 34 U.S.C. § 103(a) as being unpatenable over Nishikawa in view of Appellant's admitted prior art.

Claims 23-24 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

A copy of the claims on appeal is set forth in an attached Appendix.

IV. STATUS OF AMENDMENTS

The Response filed on September 29, 2006 did not include any claim modifications. The arguments for patentability are believed to have been entered and made of record.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Description of Independent Claims

In reference to an exemplary embodiment, claim 1 describes:

A method of detecting an abnormal pattern candidate, in which a microcalcification pattern candidate embedded in an object image is detected as an abnormal pattern candidate and in accordance with image information representing the object image, (Fig. 1, element 40, page 21, lines 4-6) the method comprising the steps of:

i) performing processing, in which a first shape-dependent filter in accordance with a shape of a microcalcification pattern is utilized, on the object image, a fine structure image, which illustrates a fine structure area embedded in the object image, being thereby formed, (Fig. 1, element 42, page 22, line 26 to page 23, line 7; page 26, line 15 to page 28, line 20; page 29, line 15 to page 31, line 4)

ii) performing enhancement processing, in which a second shape-dependent filter in accordance with the shape of the microcalcification pattern is utilized, on the fine structure image, an enhancement-processed image, in which the microcalcification pattern has been enhanced, being thereby formed, (Fig. 1, element 44, page 23, lines 7-14; page 31, line 5 to page 36, line 12) and

iii) detecting the microcalcification pattern candidate by use of the enhancement-processed image. (Fig. 1, element 46; page 23, lines 15-18; page 36, line 13 to page 38, line 26)

In reference to an exemplary embodiment, claim 8 describes:

An apparatus for detecting an abnormal pattern candidate, in which a microcalcification pattern candidate embedded in an object image is detected as an abnormal pattern candidate and in accordance with image information representing the object image, (Fig. 1, element 40, page 21, lines 3-6) the apparatus comprising:

i) fine structure image forming unit that performs processing, in which a first shape-dependent filter in accordance with a shape of a microcalcification pattern is utilized, on the object image, in order to form a fine structure image, which illustrates a fine structure area embedded in the object image, (Fig. 1, element 42, page 22, line 26 to page 23, line 7; page 26, line 15 to page 28, line 20; page 29, line 15 to page 31, line 4)

ii) enhancement-processed image forming unit that performs enhancement processing, in which a second shape-dependent filter in accordance with the shape of the microcalcification pattern is utilized, on the fine structure image having been formed, in order to form an enhancement-processed image, in which the microcalcification pattern has been enhanced, (Fig. 1, element 44, page 23, lines 7-14; page 31, line 5 to page 36, line 12) and

iii) detection unit that detects the microcalcification pattern candidate by use of the enhancement-processed image having been formed. (Fig. 1, element 46; page 23, lines 15-18; page 36, line 13 to page 38, line 26)

Description of dependent claims:

With reference to an exemplary embodiment, dependent claim 2 recites:

A method as defined in Claim 1 wherein a plurality of second shape-dependent filters, which conform to different image recording conditions at the time of object image acquisition, are prepared for the respective image recording conditions, (page 34, lines 7-11).

a second shape-dependent filter, which conforms to the image recording conditions of the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, (page 33, lines 19-22) and

the enhancement processing is performed by use of the thus selected second shape-dependent filter (page 33, line 26 to page 34, line 6).

With reference to an exemplary embodiment, dependent claim 3 recites:

A method as defined in Claim 1 wherein a plurality of second shape-dependent filters, which conform to different read-out conditions at the time of object image acquisition, are prepared for the respective read-out conditions, (page 34, lines 11-15)

a second shape-dependent filter, which conforms to the read-out conditions of the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, (page 33, lines 19-22) and

the enhancement processing is performed by use of the thus selected second shape-dependent filter (page 33, line 26 to page 34, line 6).

With reference to an exemplary embodiment, dependent claim 21 recites:

The method of claim 1, wherein the fine structure image comprises only structures approximately the size of microcalcifications and smaller (page 29, line 15 to page 30, line 4).

With reference to an exemplary embodiment, dependent claim 23 recites:

The method of claim 1, wherein an image formed from processing using the first shape-dependent filter is subtracted from the object image to form the fine structure image. (Page 26, line 15 to page 28, line 20)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

This appeal is directed to each prior art rejection and also the rejection under 35 U.S.C. § 112.[1] In particular, the grounds of rejection to be reviewed include those rejections wherein:

Claims 1, 7, 8, 14, 17, 18, 23, and 24 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Nishikawa et al. (U.S.P. 5,598,481).

Claims 2, 3, 9, 10, 15, 16, 19 and 20 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Nishikawa et al. (U.S.P. 5,598,481) in view of Takeo et al. (U.S.P. 5,714, 764).

Claims 4, 5, 6, 11, 12 and 13 have been rejected under 35 U.S.C. § 103 as being unpatentable over Nishikawa et al. (U.S.P. 5,598,481) in view of Doi et al. (U.S.P. 4,907,156).

Claims 21 and 22 are rejected under 34 U.S.C. § 103(a) as being unpatenable over Nishikawa in view of Appellant's admitted prior art.

Claims 23-24 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

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[1] The Final Office Action of April 5, 2006 also included objections to the claims for including an informality, which is not addressed by this Appeal Brief. Appellant submits that the objection is improper for the reasons of record.

VII. ARGUMENT

For each ground of rejection set forth above, Appellant requests withdrawal of the rejections for the reasons set forth below.

A. 35 U.S.C. § 112

The Examiner has rejected claims 23 and 24 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Because claim 23 is representative of the subject matter of both claims 23 and 24, this discussion specifically addresses claim 23.

The Examiner contends that the claimed subtraction of the image formed from processing using the first shape-dependent filter from the object image to form the fine structure image contradicts the language in base independent claim 1. The Examiner contends that claim 1 recites that the fine structure image is the result of the first shape-dependent filter.

Appellant respectfully submits the following arguments for withdrawal of the Section 112 rejection.

Claim 1 recites a method of detecting an abnormal pattern candidate that comprises "performing processing ... on the object image, a fine structure image....being thereby formed...." The claimed processing utilizes a first shape-dependent filter in accordance with a shape of a microcalcification pattern. Claim 8 recites a similar feature.

Appellant submits that the claim language does not necessarily recite that the fine structure image is the result of the first shape dependent filter, only that the claimed processing, which utilizes a shape-dependent filter, forms the fine structure image. Accordingly, the claimed

processing is not limited to just using the shape-dependent filter and may include other steps such the claimed subtracting as set forth in claim 23.

Therefore, the subject matter of claim 23 does not contradict claim 1 as contended by the Examiner. Therefore, claim 23 satisfies all requirements for Section 112. Claim 24 satisfies Section 112 on similar grounds.

B. 35 USC § 102: Independent claims 1 and 8 are patentable over Nishikawa

The Examiner has rejected claims 1, 7, 8, 14, 17, 18, 23 and 24 under 35 U.S.C. § 102(b) as being anticipated by Nishikawa *et al.* (US 5,598,481). ["Nishikawa"]. For at least the following reasons, Appellant traverses the rejection.

Claim 1 recites a method of detecting an abnormal pattern candidate that comprises "performing processing, in which a first shape-dependent filter in accordance with a shape of a microcalcification pattern is utilized, on the object image, a fine structure image, which illustrates a fine structure area embedded in the object image, being thereby formed..." The Examiner still contends that the preprocessing performed by the noise reduction filter of Nishikawa corresponds the claimed processing utilizing a shape-dependent filter.

In response the arguments submitted in the filing of December 30, 2006, the Examiner contends that the first shape-dependent filter is defined as a morphological filter in the Specification and that the Specification does not further define the shape-dependent filter. (Final Office Action at page 2.)

Appellant submits that the Specification merely discloses that "the first shape-dependent filter should preferably be a morphological filter." (Specification at page 8, lines 19-21,

emphasis added.) Contrary to the Examiner's contention the Specification does not limit an embodiment of the shape-dependent filter to only a morphological filter. The Specification clearly discloses that a morphological filter is a preferred embodiment of the first shape-dependent filter.

Federal Circuit case law and the MPEP are clear in that particular embodiments may not be read into the claims. See MPEP at 2100-48 which states the following:

> ("Though understanding the claim language may be aided by explanations contained in the written description, it is important not to import into a claim limitations that are not part of the claim. For example, **a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment**."); E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003). (emphasis added.)

Here, claim 1 does not even recite a morphological filter[2]. Accordingly, limiting the shape-dependent filter to a morphological filter is clearly improper.

In addition, whether the Specification does or does not further define the morphological filer is not relevant to the issue at hand. What is relevant is whether the disclosure in Nishikawa teaches the claimed shape-dependent filter as set forth in claim 1.

In this regard, Appellants clearly set forth arguments in the filing of December 30, 20005, that the noise reduction morphological filter of Nishikawa does not disclose or suggest the

[2] The recitation that the first shape-dependent filter is a morphological filter is found in dependent claim 7.

claimed shape-dependent filter in accordance with a shape of a microcalcification pattern, as set forth in claim 1.

Specifically, the noise reduction filter of Nishikawa merely reduces high frequency noise and is not designed to affect small structures (i.e., micro-calcifications). The noise filter operates on pixel values compared against surrounding values and eliminates large variations, such as spikes or pits. (Col. 21, lines 57-61.) This further supports that the noise filter is not shape dependent, which results in a fine structure area as claimed. Accordingly, the noise reduction filter of Nishikawa is not "in accordance with a shape of a microcalcification pattern" as set forth in claim 1. Even if, for the sake of argument alone, the noise reduction filter of Nishikawa may be construed as "shape" dependent, the "shape" would correspond to that of random noise (see col. 22, lines 4-50), not the "shape" of micro-calcification patterns. Therefore, Nishikawa does not disclose or suggest the claimed processing with a first shape-dependent filter as set forth in claim 1.

The Examiner does not substantively rebut the arguments that Nishikawa does not disclose or suggest the claimed shape-dependent filter. Instead, as best understood, the Examiner contends that an alleged lack of disclose in Appellants' Specification regarding an unclaimed element of claim 1, rather than any actual disclosure in Nishikawa, forms the basis for concluding "that Nishikawa's noise filter implementing the morphological operations forms a fine structure image and meets the requirements of the first shape-dependent filter." (Office Action at page 2.)

For anticipation under 35 U.S.C. § 102, the prior art must teach every aspect of the claimed invention. MPEP 700-23. Here, Nishikawa does not teach, either explicitly or implicitly, a shape-dependent filter in accordance with a shape of a microcalcification pattern. The teachings of the present Specification do not form a basis for rejecting a claim under 35 U.S.C. § 102.

Therefore, Appellant requests that the Examiner provide specific citations in Nishikawa that disclose a shape-dependent filter in accordance with a shape of a microcalcification pattern or withdraw the rejection.

Because independent claim 8 recites features similar to those given above for claim 1, Appellant submits that claim 8 is patentable for at least reasons similar to those given above with respect to claim 1.

Appellant submits that claims 7, 14, 17, 18, 23 and 24 are patentable at least by virtue of their respective dependencies.

1. The Examiner has failed to provide any analysis for dependent claim 23

In addition, the Examiner provides no substantive analysis in the rejection of claim 23, relying on the false assumption that the claim is indefinite. The claim recitations must nonetheless be examined on the merits. MPEP 2143.03. The Examiner's failure to review claim 23 on the merits over prior art constitutes clear error, and reversal of the prior art rejection of claim 23 is warranted on this basis alone.

Because the claims are not indefinite for the at least the reasons given above, Appellant submits that claim 23 is patentable because Nishikawa does not disclose or suggest the claimed

image formed from processing using the first shape-dependent filter, which is in accordance with a shape of a microcalcification pattern. Nishikawa does not further describe the subtraction process of claim 23. The Examiner has improperly ignored the claimed subtraction process. Therefore, claim 23 is patentable over the cited art.

Claim 24 is patentable based on analogous reasons.

C. 35 USC § 103: Nishikawa and Takeo do not teach features of the dependent claims

The Examiner has rejected claims 2, 3, 9, 10, 15, 16, 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Nishikawa in view of Takeo *et al.* (US 5,714,764). ["Takeo"]. For at least the following reasons, Appellant traverses the rejection.

Because Takeo does not cure the deficient teachings of Nishikawa given above with respect to claims 1 and 8, Appellant submits that these claims are patentable at least by virtue of their respective dependencies.

1. Nishikawa and Takeo do not teach features of claim 2

With further regard to claim 2, claim 2 describes shape dependent filters selected from multiple shape filters having been prepared. The Examiner generally relies on Takeo, cols. 11-13, as teaching this feature. However, the cited portions relate to sensitivity adjustment for images rather than shape or structural dependencies. Claim 2 specifically describes shape dependencies based on a recording condition. Therefore, claim 2 is patentable for this additional reason.

Claim 9 is patentable for analogous reasons.

2. Nishikawa and Takeo do not teach features of claim 3

With further regard to claim 3, claim 3 describes shape dependent filters selected from multiple shape filters having been prepared. The Examiner generally relies on Takeo, cols. 11-13, as teaching this feature. However, the cited portions relate to sensitivity adjustment for images rather than shape or structural dependencies. Claim 3 specifically describes shape dependencies based on a read out condition. Therefore, claim 3 is patentable for this additional reason.

Claim 10 is patentable for analogous reasons.

D. Nishikawa and Doi do not teach features of the dependent claims

The Examiner has rejected claims 4, 5, 6, 11, 12 and 13 under 35 U.S.C. 103(a) as being unpatentable over Nishikawa in view of Doi *et al.* (US 4,907,156). ["Doi"). For at least the following reasons, Appellant traverses the rejection.

Because Doi does not cure the deficient teachings of Nishikawa given above with respect to claims 1 and 8, Appellant submits that these claims are patentable at least by virtue of their respective dependencies.

E. Nishikawa and admitted prior art do not teach features of the dependent claims

The Examiner has rejected claims 21 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Nishikawa in view of Appellant's Admitted Prior Art (AAPA). For at least the following reasons, Appellant traverses the rejection.

Claims 21 and 22 are patentable at least by virtue of their respective dependencies.

In addition, claims 21 and 22 recite that "the fine structure image comprises only structures approximately the size of microcalcifications and smaller." The Examiner concedes

that the subject matter of claims 21 and 22 is not disclosed by Nishikawa but applies AAPA to allegedly cure the deficiency.

The Examiner cites a section of AAPA that disclose problems of the prior art. Specifically, that some prior art filters do not remove non-calcifications that are of identical size to a microcalcification.

Appellant submits that the Examiner has not made a *prima facie* case of obviousness. Merely identifying a problem does not form the basis for rendering obvious claimed elements. To make a *prima facie* case of obviousness, the Examiner must disclose the claimed feature in a prior art reference, then provide a motivation or suggestion for one skilled in the art to use the teachings of the reference to modify the system in Nishikawa and finally, show a likelihood of success for the suggested modification. See MPEP §2143.

Here, the Examiner has failed to provide any of the elements required to make a *prima facie* case of obviousness.

In view of the foregoing, Appellant submits that all the pending prior art and Section 112 rejections should be withdrawn.

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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Date: November 29, 2006

CLAIMS APPENDIX

CLAIMS 1-24 ON APPEAL:

1. A method of detecting an abnormal pattern candidate, in which a microcalcification pattern candidate embedded in an object image is detected as an abnormal pattern candidate and in accordance with image information representing the object image, the method comprising the steps of:

i) performing processing, in which a first shape-dependent filter in accordance with a shape of a microcalcification pattern is utilized, on the object image, a fine structure image, which illustrates a fine structure area embedded in the object image, being thereby formed,

ii) performing enhancement processing, in which a second shape-dependent filter in accordance with the shape of the microcalcification pattern is utilized, on the fine structure image, an enhancement-processed image, in which the microcalcification pattern has been enhanced, being thereby formed, and

iii) detecting the microcalcification pattern candidate by use of the enhancement-processed image.

2. A method as defined in Claim 1 wherein a plurality of second shape-dependent filters, which conform to different image recording conditions at the time of object image acquisition, are prepared for the respective image recording conditions,

a second shape-dependent filter, which conforms to the image recording conditions of the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, and

the enhancement processing is performed by use of the thus selected second shape-dependent filter.

3. A method as defined in Claim 1 wherein a plurality of second shape-dependent filters, which conform to different read-out conditions at the time of object image acquisition, are prepared for the respective read-out conditions,

a second shape-dependent filter, which conforms to the read-out conditions of the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, and

the enhancement processing is performed by use of the thus selected second shape-dependent filter.

4. A method as defined in Claim 1 wherein a plurality of second shape-dependent filters, which conform to different contrasts of microcalcification patterns embedded in object images, are prepared for the respective contrasts,

a second shape-dependent filter, which conforms to the contrast of the microcalcification pattern embedded in the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, and

the enhancement processing is performed by use of the thus selected second shape-dependent filter.

5. A method as defined in Claim 1 wherein a plurality of second shape-dependent filters, which conform to different sizes of microcalcification patterns embedded in object images, are prepared for the respective sizes,

a second shape-dependent filter, which conforms to the size of the microcalcification pattern embedded in the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, and

the enhancement processing is performed by use of the thus selected second shape-dependent filter.

6. A method as defined in Claim 1 wherein a plurality of second shape-dependent filters, which conform to different combinations of image recording conditions at the time of object image acquisition, read-out conditions at the time of object image acquisition, contrasts of microcalcification patterns embedded in object images, and sizes of microcalcification patterns embedded in object images, are prepared for the respective combinations,

a second shape-dependent filter, which conforms to the combination with respect to the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, and

the enhancement processing is performed by use of the thus selected second shape-dependent filter.

7. A method as defined in Claim 1, 2, 3, 4, 5, or 6 wherein the first shape-dependent filter is a morphological filter.

8. An apparatus for detecting an abnormal pattern candidate, in which a microcalcification pattern candidate embedded in an object image is detected as an abnormal pattern candidate and in accordance with image information representing the object image, the apparatus comprising:

i) fine structure image forming unit that performs processing, in which a first shape-dependent filter in accordance with a shape of a microcalcification pattern is utilized, on the object image, in order to form a fine structure image, which illustrates a fine structure area embedded in the object image,

ii) enhancement-processed image forming unit that performs enhancement processing, in which a second shape-dependent filter in accordance with the shape of the microcalcification pattern is utilized, on the fine structure image having been formed, in order to form an enhancement-processed image, in which the microcalcification pattern has been enhanced, and

iii) detection unit that detects the microcalcification pattern candidate by use of the enhancement-processed image having been formed.

9. An apparatus as defined in claim 8 wherein the enhancement-processed image forming unit operates such that:

a plurality of second shape-dependent filters, which conform to different image recording conditions at the time of object image acquisition, are prepared for the respective image recording conditions,

a second shape-dependent filter, which conforms to the image recording conditions of the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, and

the enhancement processing is performed by use of the thus selected second shape-dependent filter.

10. An apparatus as defined in claim 8 wherein the enhancement-processed image forming unit operates such that:

a plurality of second shape-dependent filters, which conform to different read-out conditions at the time of object image acquisition, are prepared for the respective read-out conditions,

a second shape-dependent filter, which conforms to the read-out conditions of the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, and

the enhancement processing is performed by use of the thus selected second shape-dependent filter.

11. An apparatus as defined in claim 8 wherein the enhancement-processed image forming unit operates such that:

a plurality of second shape-dependent filters, which conform to different contrasts of microcalcification patterns embedded in object images, are prepared for the respective contrasts,

a second shape-dependent filter, which conforms to the contrast of the microcalcification pattern embedded in the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, and

the enhancement processing is performed by use of the thus selected second shape-dependent filter.

12. An apparatus as defined in claim 8 wherein the enhancement-processed image forming unit operates such that:

a plurality of second shape-dependent filters, which conform to different sizes of microcalcification patterns embedded in object images, are prepared for the respective sizes,

a second shape-dependent filter, which conforms to the size of the microcalcification pattern embedded in the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, and

the enhancement processing is performed by use of the thus selected second shape-dependent filter.

13. An apparatus as defined in claim 8 wherein the enhancement-processed image forming unit operates such that:

a plurality of second shape-dependent filters, which conform to different combinations of image recording conditions at the time of object image acquisition, read-out conditions at the time of object image acquisition, contrasts of microcalcification patterns embedded in object images, and sizes of microcalcification patterns embedded in object images, are prepared for the respective combinations,

a second shape-dependent filter, which conforms to the combination with respect to the object image to be processed, is selected from the plurality of the second shape-dependent filters having been prepared, and

the enhancement processing is performed by use of the thus selected second shape-dependent filter.

14. An apparatus as defined in claim 8, 9, 10, 11, 12, or 13 wherein the fine structure image forming unit utilizes a morphological filter as the first shape-dependent filter.

15. The method of claim 2, wherein the image recording condition is one of a tube voltage of a radiation source, a radiation dose, a compression force and a compression thickness.

16. The apparatus of claim 9, wherein the image recording condition is one of a tube voltage of a radiation source, a radiation dose, a compression force and a compression thickness.

17. The method of claim 1, wherein the first shape-dependent filter is a morphological filter and the second shape-dependent filter represents an image density pattern of the microcalcification pattern.

18. The apparatus of claim 8, wherein the first shape-dependent filter is a morphological filter and the second shape-dependent filter represents an image density gradient of the microcalcification pattern.

19. The method of claim 1, wherein the second shape-dependent filter is optimized with respect to an image recording apparatus and an image read-out apparatus.

20. The apparatus of claim 8, wherein the second shape-dependent filter is optimized with respect to an image recording apparatus and an image read-out apparatus.

21. The method of claim 1, wherein the fine structure image comprises only structures approximately the size of microcalcifications and smaller.

22. The apparatus of claim 8, wherein the fine structure image comprises only structures approximately the size of microcalcifications and smaller.

23. The method of claim 1, wherein an image formed from processing using the first shape-dependent filter is subtracted from the object image to form the fine structure image.

24. The apparatus of claim 8, wherein an image formed from processing using the first shape-dependent filter is subtracted from the object image to form the fine structure image.

EVIDENCE APPENDIX:

Pursuant to 37 C.F.R. § 41.37(c)(1)(ix), submitted herewith are copies of any evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 or any other evidence entered by the Examiner and relied upon by Appellant in the appeal.

None

RELATED PROCEEDINGS APPENDIX

Submitted herewith are copies of decisions rendered by a court or the Board in any proceeding identified about in Section II pursuant to 37 C.F.R. § 41.37(c)(1)(ii).

None.